



DEPOSITION SYSTEMS FOR ORGANIC ELECTRONICS

OVPD-200 Organic Vapor Phase Deposition

AIXTRON

Our technology. Your future.

ORGANIC VAPOR PHASE DEPOSITION

OVPD-200

OVPD-200

Process Module Overview

Most innovative method to deposit small molecule organic materials

For applications in the field of organic electronics

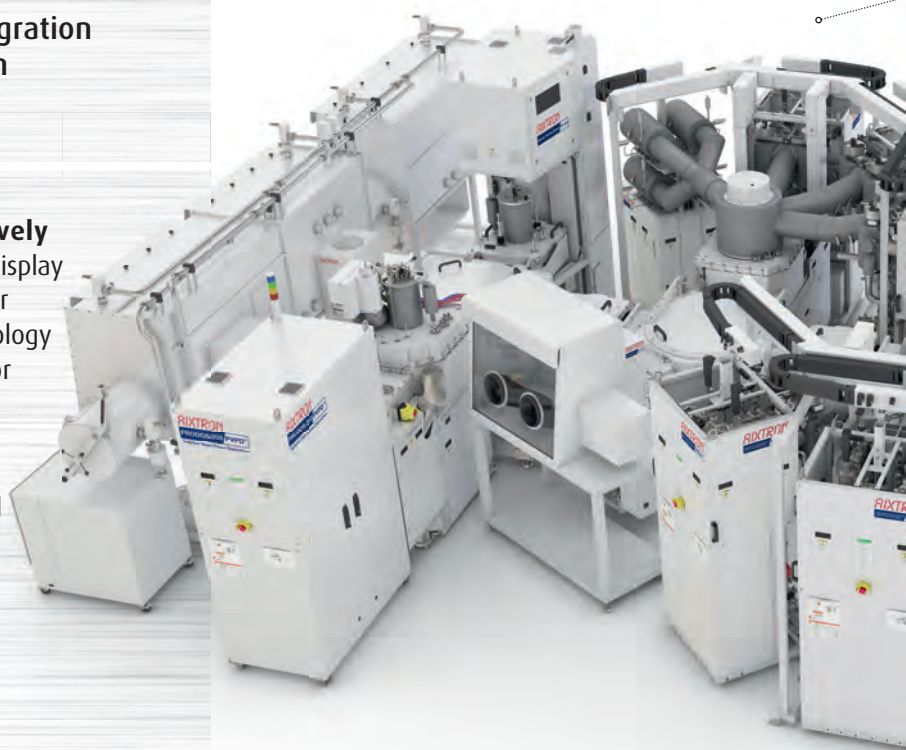
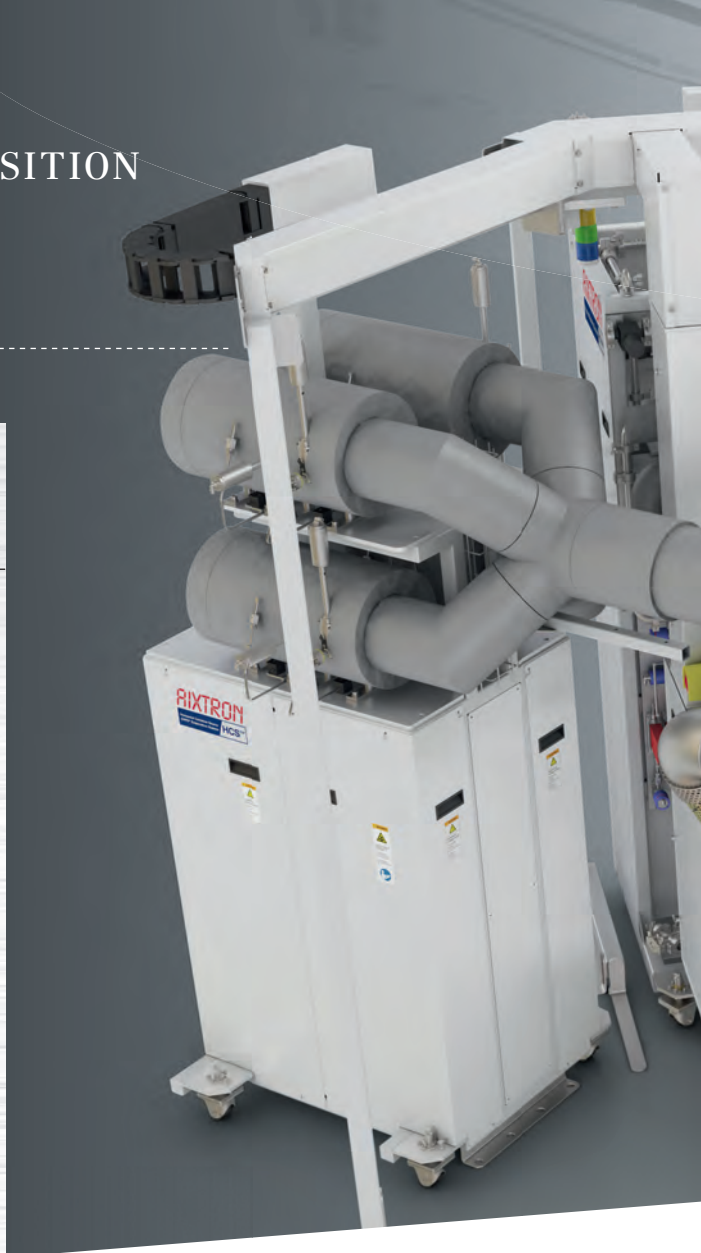
- ▶ Displays, Lighting, Solar Cells, Transistors etc.

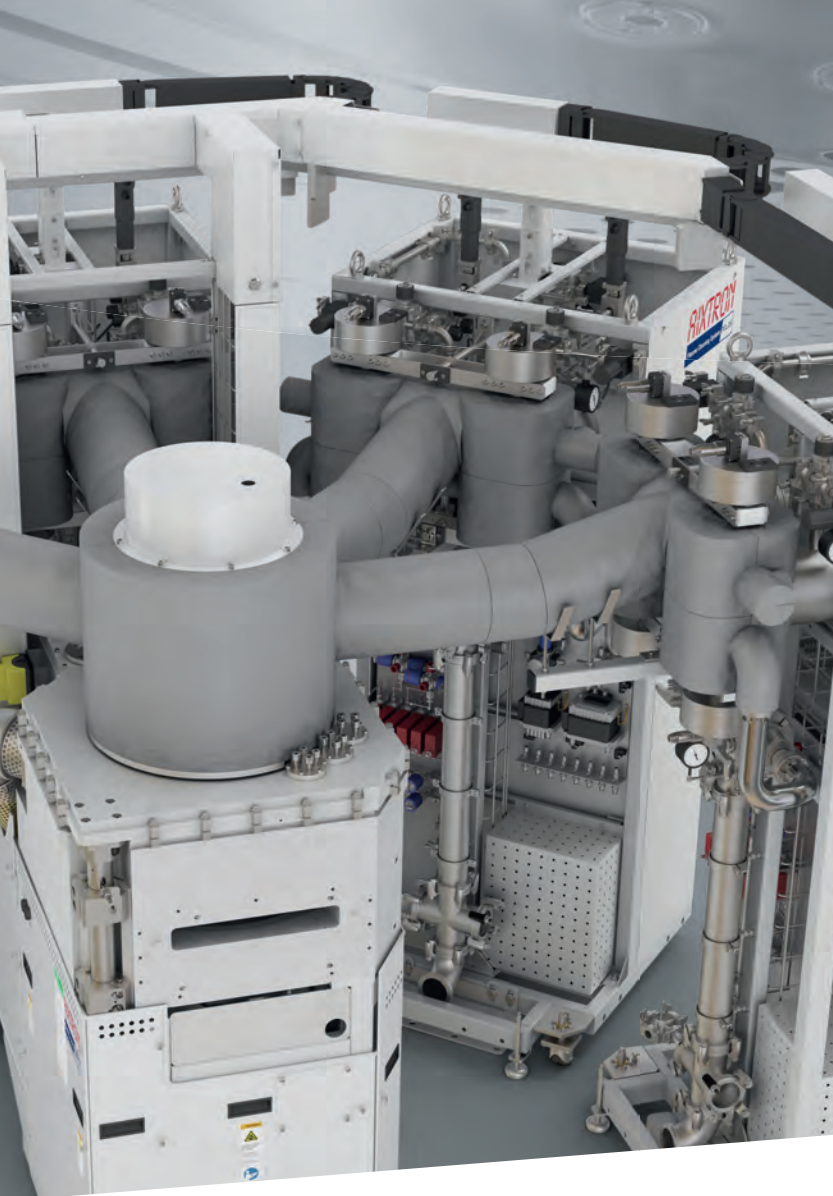
Unique Advantages

- ▶ Enabling highest deposition rates (1–100 Å/s, material dependent)
- ▶ Minimizes risk of degradation of organic material through STExS (Short Thermal Exposure Source) Technology
- ▶ Best organic material utilization efficiency > 30 %
- ▶ Highest thickness uniformity and reproducibility: Range ≤ 2 %
- ▶ Control of morphology through substrate temperature: Film roughness typ. ≤ 2 nm RMS
- ▶ Variable interface control: Sharp and graded layer with multi component mixing possible

Flexible configuration and integration in cluster environment based on modular building blocks

OVPD technology has been **exclusively licensed** to AIXTRON from Universal Display Corporation (UDC), Ewing, NJ, USA for equipment manufacture. OVPD technology is based on an invention by Professor Stephan R. Forrest et al. at Princeton University, USA, which is exclusively licensed to UDC. AIXTRON and UDC have jointly developed and qualified OVPD pre-production equipment.





OVPD-200

Process Module Configuration

Substrate Size: 200 x 200 mm²

Connects with up to 5 Source Modules

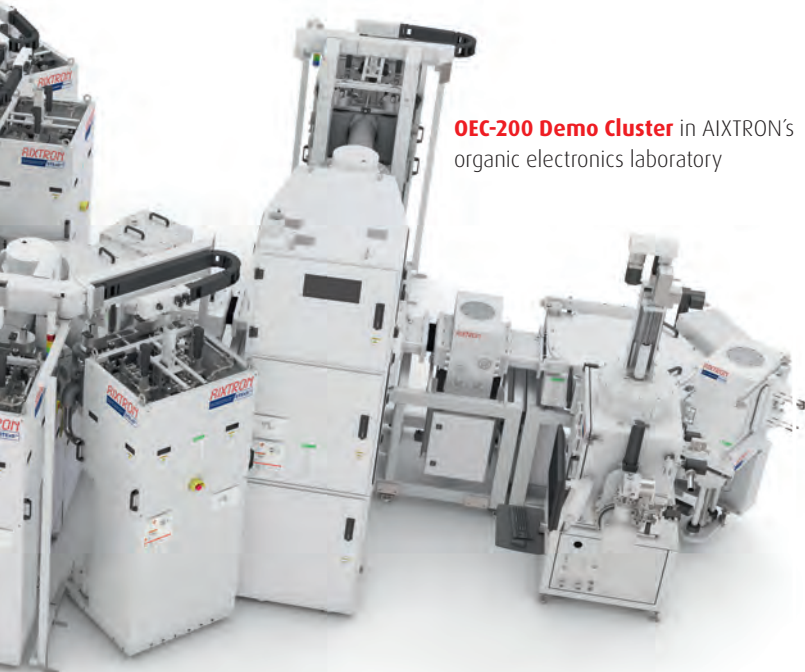
- ▶ HCS (Horizontal Container Source) Module with 4 Organic Material Sources
- ▶ STExS (Short Thermal Exposure Source) Module with 2 Organic Material Sources

Substrate/Mask alignment accuracy:
 $\leq \pm 250 \mu\text{m}$; Optional: FMM-alignment
 accuracy: $\leq \pm 3 \mu\text{m}$

Indexer for segment deposition and
 combinatorial optimization of process
 parameters

Fully computer-controlled

OVPD-200 with 3x STExS and
 1x HCS modules



OEC-200 Demo Cluster in AIXTRON's
 organic electronics laboratory

OEC-200

Organic Electronics Cluster

AIXTRON offers a wide range of equipment
 building blocks for manufacturing needs in the
 field of organic electronics. **Highest flexibility**
 is given by individually **custom-tailored**
configurations.

The product range consists of process modules
 (PMs), utility modules (UMs) and transfer modules
 (TMs) that **can be clustered** to enable applications
 on basis of OLED display, lighting, solar cells
 (OPV), transistors or functional polymer layers
 (e. g. dielectric, conductive, hydro- or oleophobic).

AIXTRON offers the **full range** from single process
 modules for integration to third party clusters
 towards **full pilot-production clusters** with up
 to eight transfer modules.

OEC-200

Cluster Integration Options

TRANSFER MODULE (TM)

TM-200

Automated transfer of substrates and masks

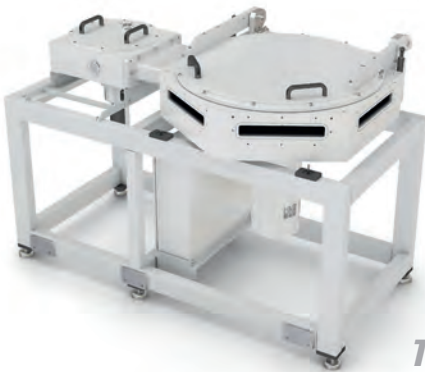
- ▶ LP (low pressure ~ 1 hPa) section for OVPD
- ▶ HV (high vacuum ~ 10^{-6} hPa) section for vacuum thermal evaporation (VTE) processes 4, 5 or 6 facets/ports for flexible configuration with process modules (PM) and utility modules (UM)

PA-200 Pre-Alignment (PA) Module

- ▶ Pre-aligns substrates for frame-less handling
- ▶ Rotates substrate 180° in passage configuration between adjacent TMs



TM-200 / 6 facets



TM-200 / 5 facets



TM-200 / 4 facets

OEC-200

Utility Modules

MASK MAGAZINE

MM-200

- ▶ Holds up to 10 masks
- ▶ LP or HV option
- ▶ Sliding door interface to fab space or GB



LOAD LOCK

LL-200

- ▶ LP or HV option
- ▶ Sliding door interface to fab space or GB
- ▶ Cassette for up to 10 substrates



FLIP CHAMBER

FC-200

- ▶ Flips substrate from facing up (OVPD) to facing down (VTE) and vice versa



AIXTRON

Global Presence



CHINA

AIXTRON China Ltd.
Phone +86 (21) 6445 3226
Fax +86 (21) 6445 3742
E-Mail chinainfo@aixtron.com

KOREA

AIXTRON Korea Co., Ltd.
Phone +82 (31) 783 2220
Fax +82 (31) 783 4497
E-Mail koreainfo@aixtron.com

UNITED KINGDOM

AIXTRON Ltd.
Phone +44 (1223) 519 444
Fax +44 (1223) 519 888
E-Mail info@aixtron.com

GERMANY

AIXTRON SE
Phone +49 (2407) 9030-0
Fax +49 (2407) 9030-40
E-Mail info@aixtron.com

SWEDEN

AIXTRON AB
Phone +46 (46) 286 8980
Fax +46 (46) 286 8989
E-Mail info@aixtron.com

USA

AIXTRON Inc.
Phone +1 (408) 747 7140
Fax +1 (408) 752 0173
E-Mail usinfo@aixtron.com

JAPAN

AIXTRON K.K.
Phone +81 (3) 5781 0931
Fax +81 (3) 5781 0940
E-Mail japaninfo@aixtron.com

TAIWAN

AIXTRON Taiwan Co., Ltd.
Phone +886 (3) 571 2678
Fax +886 (3) 571 2738
E-Mail taiwaninfo@aixtron.com



www.aixtron.com